

RECORDS OF AUSTRALIAN FUNGI. No. i.

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We propose to record, from time to time, under the above heading, various fungi, more especially Basidiomycetes, that have passed through our hands. Nearly all the specimens referred to belong either to our private collections, or to that in the National Herbarium, Sydney. In recording specimens, we propose to do so in such a way, that the actual plants may be identified from our reference, and from a note attached to them citing the reference. In searching the literature on Australian fungi, we have found records of many species, but rarely any means by which the identification can be checked, as, for instance, by examination of the actual plants identified. In consequence, some, probably many, mistakes have been made, which now cannot be rectified. We propose to give our successors every assistance in criticising our decisions. In such a difficult subject, at present in an almost chaotic state, mistakes are bound to be made by us, but we want them to be retrievable in the light of further and fuller knowledge.

C O P R I N U S.

COPRINUS COMATUS Fries.—Recorded by Cooke for Victoria, and for this State by one of us (E.C.) in Proc. Linn. Soc. N. S. Wales, 1907, xxxii., 475. We have met with this esculent species on several occasions during winter and early spring, on Milson Island, Hawkesbury River (July), and in Sydney. It is quite common in the Botanic Gardens and Domain during the month of June. (Specimens in the National Herbarium under No. 56). During 1914, it was very abundant, growing near the roadside at Kensington, Sydney, in large tufts (spores $14-15.5 \times 8.5-9\mu$). Young specimens were cooked and eaten, after scraping off the

scales, and proved very palatable. In the Milson Island specimens, the spores measured $17.3 \times 10-11\mu$.

COPRINUS ATRAMENTARIUS Fries.—Our specimens were collected in June and July, 1907, in a plantation in the Botanic Gardens, and are preserved in the National Herbarium under Nos. 55 and 64. Spores $5.8 \times 4.6\mu$.

COPRINUS EXTINGTORIUS Bull. — Specimens of this species were collected on a manure-heap in the Botanic Gardens, in April, 1908, and recorded by one of us (E.C.), *l.c.* Spores $10-13 \times 6.7\mu$.

COPRINUS FIMETARIUS Fries.—We have collected this species on dung at Milson Island, in March (spores $11-12 \times 7.7.5\mu$). Some large specimens, with yellowish-brown, crusty scales on the top of the pileus, and with stems 5 inches long, and nearly 4 lines thick, growing on manure at Sydney, had spores $10-10.8 \times 7.7.2\mu$ in size. The spores of specimens growing on dung at Adelaide, in July, were $13.8 \times 8\mu$. Narrabeen, January (spores $10.4-13.8 \times 7.8.5\mu$).

COPRINUS MICACEUS Fries.—Recorded by Cooke, for Victoria and South Australia. The species is common in New South Wales, being found densely fasciculate at the base of old stumps, posts, telegraph-poles, etc. It is common in the Botanic Gardens during the month of June. The spores are obliquely oval, dark brown to blackish, $8.5 \times 5.2.7\mu$. Milson Island, Hawkesbury River, and Sydney.

COPRINUS DELIQUESCENS Fries.—A species growing on a rotten stick at Neutral Bay, Sydney, in March, agrees with the description and Cooke's plate of this species. Spores dark brown, $7.8.9 \times 5.2.7\mu$.

COPRINUS CONGREGATUS Bull. Specimens, resembling the figures of this species, were obtained, growing amongst decaying straw, at Milson Island, in July. Spores $12-13 \times 7\mu$.

COPRINUS SCLEROTIANUS, n.sp.—Several irregular-shaped sclerotia, about the size of mung-beans ($1\frac{1}{2}-2\frac{1}{2}$ lines diam.) were found at Colo, Southern Line, under cow-dung, in March, 1914.

Three of these were placed in cow-dung covered with watch-glasses, and kept moist. After 16 days, each sclerotium produced a white, mealy projection, which at first developed very slowly, but after several days showed more rapid growth, and a distinct differentiation into pileus and stipes was noticeable. Two weeks later, the sporophore was fully grown, and, in 24 hours, the pileus opened out into 9 rays, and the plant elongated very rapidly.

The outer coating of the sclerotium is thin, and dark or nearly black in colour, and the inner substance is whitish, evidently composed of closely woven hyphæ. Pileus cylindrical at first, pallid or pale grey, very mealy, about $2\frac{1}{2}$ -4 lines long, and $1\frac{1}{2}$ -2 lines in diameter, splitting at length into rays, which are striate, and become a darker grey at maturity. Gills few, at first white but soon dissolving into a black, inky fluid. Stem, under natural conditions, very slender and comparatively smooth; but, under artificial culture, about $\frac{1}{2}$ line thick, and more or less covered with a mealy substance, which somewhat resembles silky down. When fully matured, it elongates very rapidly, reaching a length of about $2\frac{1}{3}$ inches, and is quite smooth and glabrous in the upper part, but still retains the silky down in the lower part. Spores elliptical, $8-10 \times 4-5\mu$.

We have collected this species, which resembles somewhat the figures of *C. tomentosus* and *C. niveus*, on three other occasions, but have, in only one of these cases, found the attached sclerotium. One of these was collected on rich soil at Neutral Bay, in June, 1913. The cap was conical greyish from fine particles, and striate. Stem white, $1\frac{1}{2}$ inches long, spores $8.5-10 \times 5.2\mu$. The second was on a dunged garden at Neutral Bay, in April, 1915. The cap appeared as if covered with a fine, grey felt. There was a long, black root. Spores $10.4 \times 5.5\mu$. The third specimen was collected in the same garden in December, 1915, attached to a black sclerotium, the size of a pea; which, on section, was whitish. The pileus was bluntly conical, $\frac{1}{2}$ inch high and $\frac{3}{8}$ inch broad, covered with a grey tomentum, and finely striate. Stem $1\frac{3}{4}$ inches high, white, finely fibrous. Gills very crowded, blackish, ascending, adnexed, covered, before expan-

sion, with a fine grey tomentum. On expanding, the pileus become very thin, and revolute. Spores dark purple, nearly black, in the mass, $8.5-10.5 \times 5.2\mu$, oval. The sclerotium was kept moist in a saucer, and at once showed several, small, fluffy projections. One of these gradually elongated, being covered with a whitish tomentum. Eventually, this rapidly elongated, and bore a smaller and whiter pileus than the one found developing naturally.

COPRINUS RADIATUS Fries.—A small, ephemeral species, found growing on dung, at Sydney, in March, may be referable to this species. It was at first conical, white, and covered with snowy particles, later becoming convex. The spores were nearly spherical, with the ends a little pointed, 7μ in diameter or $7 \times 5\mu$. Other specimens collected on dung at Mosman, Sydney, in July, are certainly this species. Their description is as follows: about $\frac{3}{16}$ inch in diameter, at first cylindrical, with a greyish bloom, finally plane and greyish, except for the pale fawn, depressed centre, showing pale fawn-coloured, scurfy granules, ribbed. Gills about 23, moderately distant. Stem about 1 inch high, white, base thickened, a little downy. Spores subspherical to triangular, $5.5-7\mu$. Specimens also from Hill Top, growing on cow-dung, spores $8 \times 5\mu$; and Terrigal, on dung, June, spores $7 \times 4.3\mu$, 7μ , irregular.

COPRINUS STERCORARIUS Fries.—We have collected specimens on dung at Ryde, in May (spores $10.5-15.5 \times 7-10\mu$). Specimens obtained at Manly, in July, showed a conical cap, $\frac{1}{2}$ inch high and $\frac{1}{2}$ inch broad, covered with a white, micaceous meal, with a slight grey tinge. Gills dark grey, ascending, adnate. Stem 2 inches high, white, somewhat floccose, hollow, base a little swollen. Spores $12-13.8 \times 8.5-10.5\mu$, often obese. Hill Top, January, 1913, spores $14 \times 5-10\mu$. Hyde Park, on manured soil, January, spores $10-13 \times 7-9\mu$.

COPRINUS EPHEMERUS Fries.—Recorded by Cooke for Queensland. We have found it in Sydney, on horse-dung, in March (pileus minutely furfuraceous when young, spores $15.5-17 \times 10.4\mu$); also at Penshurst, in February, 1911; spores $10-16 \times 8-10\mu$.

COPRINUS PLICATILOIDES Buller.—Buller (Researches on Fungi, 1909, p.69) describes a (frequently) minute *Coprinus*, resembling *C. plicatilis*, under this name. He states that it grows on horse-dung, and is often amongst the most tiny of the Agarics, being sometimes only 1 cm. long, and 2 mm. wide. The average length is 3 cm. (a little over an inch), with a cap 5 to 6 mm. wide. The fruit-bodies are very delicate. He adds, that he considers it undescribed, and that, though having a depressed disc at maturity, like *C. plicatilis*, this is narrow and not broad, whilst the gills are not attached to a collar, and the spores are oval.

We have, on several occasions, collected a species which, from the above description and Buller's figures, we believe to be this. *C. ephemerus*, in Cooke's Illustrations, resembles our species, but is larger, and has an elevated disc. Specimens collected on horse-dung, at Sydney, in March, may be described as follows:—Small. When young, conical, with fine, brownish granules, then convex, $\frac{1}{4}$ inch in diameter, grey, centre depressed, coarsely ribbed, covered with a few, fine, brown flakes. Gills 12 to 20 or 30 in number, narrow, distant, alternate ones short, fading away as the stem is reached. Stem 1 inch or more high. Spores black, $13.8-16 \times 8.5-9\mu$. Specimens collected in numbers, on horse-dung, at Dubbo, in October, are very similar. The pileus is at first uniformly covered with fine, brown scales; later, these become scattered, revealing the paler brown, striate pileus. The stem is white, and more or less fluffy, or even radiately strigose at the base. Spores $14-14.2 \times 7.8-2\mu$.

COPRINUS ANGULATUS (Lloyd, in "Mycological Notes," Dec., 1900, p.46).—"Pileus when young hemispherical, even, striate, becoming convex and plicate-sulcate when mature, smooth, when young white with ochreous tints, when partly grown dark grey with a brown (somewhat hygrophanous) centre, thin. Gills rather distant, reaching the stem, when mature (but before deliquescing) black with a white edge. Stipe pure white, equal, hollow, striate, when *very young* evidently white scurfy, but appearing glabrous when grown. Spores very peculiarly angular shape like a keystone, $14 \times 9\mu$. On burnt ground, somewhat gregarious."—Lloyd.

On Milson Island, Hawkesbury River, in November, 1914, and again in February, 1916, a fungus appeared on bare ground (which had possibly been burnt—a fire had been near), which resembles markedly the photograph given by Lloyd, and is characterised by what was described, at the time, as “irregularly oval” or “rather triangular” spores, somewhat smaller than the dimensions given by this author. The plant in question seemed to be a *Coprinus*, though, later, dried specimens were found, which is sometimes the case with *Coprinus micaceus* when hot, dry conditions rapidly supervene. Though these slight discrepancies exist, this Australian species seems best placed under this description, at least for the present. A description of our plants is as follows:—Pileus up to $1\frac{1}{4}$ in. in diameter, at first somewhat hemispherical and slightly umbonate, then convex and later nearly plane, greyish-brown, becoming pale, with a pallid brown or yellowish-brown centre, slightly depressed in the middle, and with a few, scattered, scurfy scales; the periphery densely sulcate-striate, the striae thick and forked from half-way, the striae running up to the central $\frac{5}{8}$ in., which is a duller brown than the centre itself. Gills dark grey, adnate, crowded, narrow, no collar. Stem $2\frac{1}{2}$ - $2\frac{3}{4}$ inches, white, fragile, hollow, finely striate; on drying and shrinking, found to be attached to the ground by a swollen, fluffy base. Spores rather triangular or irregularly oval, occasionally $7 \times 5.2\mu$, usually $10.4 \times 7.8.5\mu$.

COPRINUS PLICATILIS Fries.—The following description applies to a common species growing on the ground at Sydney. It seems to be *C. plicatilis*, though the collar, to which the gills are attached, is not marked, and the spores are smaller. When young, conico-cylindrical, covered with chestnut, scurfy scales, sandy brown, striate, closed by the veil. When expanded, $\frac{1}{3}$ to $\frac{1}{2}$ inch; disc pale brown, depressed, ribs double, bifurcated at the edge, greyish-brown or greyish-white, disc and ribs flecked with dark brown scales. Gills whitish, just reaching the stem, very thin and fragile, moderately crowded. Stem $1\frac{1}{2}$ inches, white, attenuated upwards, a slight mycelium at the base. Spores black, oval, one end more pointed, $9.5-10.5 \times 7.3-8.5\mu$.

COPRINUS HEMEROBIUS Fries.—The following has been found on the ground at Neutral Bay. Cap up to $1\frac{1}{4}$ inches, convex, umbonate, umbo light brown, ribs greyish-white, often bifurcate at the edge. Gills white, then black. Stem up to 3 inches high, white, slightly attenuated upwards, hollow. Spores egg-shaped, $8.6 \times 7\mu$, $7 \times 6\mu$. It is also quite common in the Domain during the month of June. Spores $7.9 \times 6.7\mu$.

COPRINUS sp.(1).—Resembles *C. radiatus*, but the spores are larger; and there are scattered hairs on the cap and stem. When young, it is the size of a large pin's head, conical, pale brown, apex darker, slightly striate, later expanded. Stem white, $\frac{1}{2}$ inch long. Stem and cap with scattered, minute hairs. Spores $10.4-12 \times 7\mu$. On horse-dung, Manly, April 4th, 1915. (Herb. J. B. Cleland. Formalin-specimen, No 90).

COPRINUS sp.(2).—Small, conical, then convex, finally more expanded. Woolly-white, then greyish. Slightly ribbed, very thin. Stem up to 1 inch. Spores oval, $8.5-9 \times 5\mu$. On cow-dung, Adelaide, September 22, 1913. Covered with white down. On cow dung at Neutral Bay, July 27, 1913. Spores black, $8 \times 3.5\mu$.

THELEPHORACEÆ.

CRATERELLUS CORNUCOPIOIDES L.—Recorded by us as new for New South Wales, in Journ. Proc. Roy. Soc. N. S. Wales, 1913, p. xv.

LACHNOCLADIUM CONGESTUM Berk.—Cooke records this species (as *Thelephora congesta*) for Victoria, Queensland, and New South Wales. Lloyd has kindly identified specimens for us, which, he says, agree exactly with his photograph of the type. He adds: "I made the spores of the type 'smooth, globose, 8-10 micr., pale-coloured.' These spores I make 'pale-coloured,' not 'purplish-brown,' and almost smooth." The plant is common in the neighbourhood of Sydney, on bare, damp ground, such as foot-paths. We have collected it at Neutral Bay, and at Waterfall, in April; and also at Milson Island, Hawkesbury River. The Neutral Bay plants, which Lloyd has seen, are gregarious, and

consist of numerous, separate individuals, each with a slender stem, and several branches; whilst the Waterfall specimens, also identified by him, form plants up to $\frac{3}{4}$ inch in diameter, showing a thick, short, stem-like base, which expands into numerous dendritic branches. The spores of the former were $8.5 \times 5.2-7\mu$, slightly irregular; of the latter, pale brown microscopically, $10 \times 7\mu$, somewhat irregular and oval. Another collection, resembling the Neutral Bay specimens, showed shed spores purplish, oval, knobby and spicular, $8.5 \times 7\mu$ —the bases of these plants were purplish, and the tips silvery-white; whilst, on squashing specimens, there was a seminal smell.

THELEPHORA DENTOSA Berk.—Specimens of this species, growing under native shrubs and trees (*Angophora lanceolata*) at Neutral Bay, have been identified by Lloyd, who states that the species was originally described from Cuba; and he points out that it is subincrusting, and sends up free pilei, which is peculiar among the Thelephoras. The spores are vinous, irregular, $8.5 \times 7\mu$.

THELEPHORA TERRESTRIS Ehrenb., (*T. laciniata* Pers.).—We have met with this species, of which Lloyd has examined specimens for us, on several occasions, and *always under or close to species of Pinus*. It is unquestionably an introduced species, and seems unable to exist apart from the introduced Pines. Lloyd informs us that *T. laciniata* is a synonym. The plant is recorded, under both names, by Cooke, for Victoria. We now add New South Wales; we have seen specimens under *Pinus* at Adelaide. The plants often occupy an area of several inches in extent on the ground, or may encrust sticks or the bases of stumps. Pine-needles are often incorporated in the growth. The spores are very irregular, microscopically brownish, with a large, oval, central "nucleus," $8.5 \times 7\mu$. Richmond, N.S.W., (August, 1912); Willoughby, Sydney (August, 1915); Randwick (W. F. Blakely; January, 1911); Cheltenham (A. A. Hamilton; February, 1911).

STEREUM CAPERATUM Berk. et M.—Specimens of this species were recorded for the Tweed River by Berkeley (Journ. Linn.

Soc., Bot., xviii., p.385, 1880), and for Daintree River (Grevillea, xi, p.29, 1882). In addition to the above localities, Massee (Journ. Linn. Soc., Bot., xxvii., p.161, 1890) records it for the Clarence River. See also Grant, in Reports Botanic Gardens, Sydney, (1902) 1903, p.9; and Cheel, (1909) 1910, p.10. In the National Herbarium, there are several very fine specimens, the largest from Mount Cooroy, Queensland, measuring, when quite fresh, $17\frac{1}{4}$ inches across; and another from Gosford, N.S.W., measuring 13 inches across, and 11 inches high, from the pad of the foot-stalk to the surface of the pileus. The foot-stalk of the various specimens is variable in length, some being almost sessile, whilst others have it up to $2\frac{1}{2}$ inches long. The tomentum on the foot-stalk, as well as on the upper surface of the pileus, is also very variable, being sometimes thickly matted, and, in other cases, very thin; the hymenium varies considerably in being more or less plicate. The following is a list of the localities and collectors:—Manning River (J. L. Boorman; October, 1902); Coff's Harbour (Forest Guard; April, 1909); Ourimbah (J. Staer; December, 1910); Wamberal (E. Cheel; April, 1911); Lilyvale (A. A. Hamilton; June, 1910). From Warburton, Victoria, there are some deformed specimens, collected in April, 1907; and the Mount Cooroy, Queensland, specimens, mentioned above, were collected by J. Staer, in March, 1910. Specimens collected by one of us (J.B.C.) in June, 1916, at Lisarow, had fusiform, thick-walled cystidia, $42\text{-}50 \times 12\text{-}13\cdot8\mu$. Others, obtained at Bulli Pass in April, 1914, had shed spores, $8\cdot5\text{-}8\cdot8 \times 3\cdot5\text{-}5\mu$ in size. In many of the last two collections, the stem is nearly lateral.

STEREUM ELEGANS Fr.—In connection with this species, Lloyd states (Synopsis of the Stipitate Stereums, p.24, 1913) that it is very common in Australia. The only specimens we have seen in this State are from Gladesville (Miss Flockton; April, 1911), and Mount Kembla and Mount Jellore (E. Cheel; April, 1912). There are also some specimens from Grose Vale (Miss Campbell, No.21; September, 1912) in the National Herbarium, which seem to belong to this species, but unfortunately they are partly destroyed by the larvæ of some insects.

STEREUM NITIDULUM Berk.—We have a collection obtained at Terrigal, in June, 1914, which Lloyd thinks is this species. The pileus was fawn-coloured when fresh, with darker zones and pale tips. The hymenium was paler. Spores pear-shaped, oblique, $5.2 \times 3.4\mu$. Growing on the ground..

STEREUM PERGAMANEUM Berk.—Specimens, identified as probably this species by Lloyd, were obtained at Pittwater, in April, 1914, attached to wood at the base of an old stump. The spores were pear-shaped, white, $5 \times 3.5\mu$, with a large, central "nucleus."

STEREUM HIRSUTUM Fries.—This species was recorded for New England by Berkeley (in Journ. Linn. Soc., Bot., xiii., p.168, 1873), and for Pennant Hills, Parramatta (*l.c.*, xvi., p.40, 1878). It has also been recorded for this State by Lloyd (Letter No.19, 1908, and Letter No.60). We have numerous specimens in our collections, and have also examined those in the National Herbarium. The spores measure $5.5-7 \times 2.2-2.5\mu$. The following localities are represented:—Penshurst (E. Cheel; July, 1907); Bowral (E. C.; September, 1907); Narrabeen (E. C.; May, 1908); Colo Vale (E. C.; August, 1908); East Hills (E. C.; September, 1908); Chatswood (A. A. Hamilton; August, 1908); Wiseman's Ferry (J. L. Boorman; March, 1908); Cronulla Beach (A. A. Hamilton; March, 1909); Bowral (W. Greenwood; June, 1909); Pittwater (A. Maclellan; September, 1909); Lane Cove on living plant of *Casuarina* (A. A. Hamilton; August, 1909); Upper George's River (J. Staer; January, 1910); Rookwood (Miss A. Spencer; July, 1910); St. Mary's (A. A. Hamilton; August, 1910); Springwood and Leura (A. A. Hamilton; March, 1910); Lilyvale (A. A. Hamilton; June, 1910); Erina (J. Staer; May, 1910); Milson Island (J. B. Cleland; June, 1912); Kurrajong Heights; (J. B. Cleland; August, 1912); Grose Vale (Miss Campbell; September, 1912); Galston (E. Cheel; June, 1913); Hill Top (E. Cheel; April, 1914); Orange (J. B. Cleland; October, 1914); Mosman (J. B. Cleland; April, 1915); Blue Mountains (May); Mount Macedon, Victoria (E. Cheel; February, 1908).

STEREUM MEMBRANACEUM Fries, (syn., *S. papyrinum* Mont.—Lloyd).—In identifying specimens of this species for us, Lloyd says:—"It does not seem to be in Cooke's compilation, but it is a very common and wide-spread, tropical species. The hymenium is densely covered with pale (almost hyaline) setæ."

This purple-brown, usually mostly resupinate, species is very common in the Sydney district, on fallen logs and old stumps. The pileus, often ill-developed, is hairy, obscurely zoned, and greyish-brown; the hymenium rather tuberculose, and dark purplish to light purplish-brown. The cystidia are brownish, acuminate to somewhat clavate, rough, $51-120 \times 8.5-10.4\mu$. Spores colourless, $7.8.5 \times 3.5\mu$. On dead shrub, Long Bay, Sydney (J. B. Cleland; September, 1913); Sydney (J.B.C.; various collections); Kew, North Coast (J.B.C.; October, 1915); Botanic Gardens, Sydney, on fence-rails (E. Cheel; June, 1907); Penrhurst, on *Melaleuca linariifolia* (E. Cheel; June, 1907); Leura (A. A. Hamilton; January, 1912); Drouin, Gippsland (C. C. Brittlebank; October, 1916).

STEREUM ILLUDENS Berk., (syn., *S. spinigerum*—Lloyd, Letter No.51, Note 155).—The type-specimens were collected by Drummond (No.158), probably in Western Australia (Hooker's London Journ. Bot., iv., p.59, 1845). It has since been recorded for Sealer's Cove, Wangaratta, Fifth Creek, and Port Darwin (Journ. Linn. Soc., Bot., xiii., p.168, 1873). Specimens, collected in this State, have also been identified by Lloyd (Letter No.60, Note 346), who states that *S. spinigerum* is a synonym based on young specimens, and adds "the hyaline, spiny cystidia (dendrophysen) are entirely different from the coloured setæ of *Hymenochaete*." This is a common species in New South Wales, with a zoned, dark brown to palish-brown pileus, with light chestnut hairs covering the ridges. The undersurface, when moist, is smooth, slightly wavy, of a peculiar purplish greyish-brown, with a paler yellowish-brown edge, when dry pale grey. The colourless cystidia are subclavate, rough with projections, $17.35 \times 3.5\mu$, occasionally to 6μ . Spores elongated, colourless, $7.10.4 \times 3.6\mu$. We have a fine series of specimens from the following localities:—Peakhurst (W. Buckingham; July, 1899);

Penshurst (E. Cheel; June, 1907); Colo Vale (E. Cheel; August, 1908); Leura (A. A. Hamilton and T. Steel; April, 1908); Lane Cove (A. A. Hamilton; August, 1909); Thirroul (J. B. Cleland; April, 1909; no cystidia seen); Cheltenham and Hornsby (A. A. Hamilton; May, 1910); Lilyvale (A. A. Hamilton; June, 1910); Hawkesbury River (J. B. Cleland; April, 1910); Erina (J. Staer; May, 1910); on dead wood, Milson Island (J. B. Cleland and E. Cheel; July, 1912); Grose Vale (Miss Campbell, No.25; September, 1912); on fallen log, Kurrajong Heights (J. B. Cleland; August, 1912); Hill Top (E. Cheel and J. B. Cleland; October, 1913); Wellington (J. B. Cleland; October, 1914); Hornsby, on *Pultenaea flexilis* (W. F. Blakeley; August, 1915); Kew (J. B. Cleland; October, 1915); Willoughby (A. G. Hamilton); near Adelaide (J. B. Cleland; 1898). There are also specimens in the National Herbarium, from Tasmania, collected by W. H. Archer.

STEREUM (HYMENOCHÆTE) VILLOSUM Lev., (syns., *H. phœum*, *H. spadiceum*, and *H. strigosum* of Berkeley—Lloyd. Lloyd states (Letter No.46) that this species is the analogue in the East of *S. tabacinum*.

This is a common species in the neighbourhood of Sydney, with a rich dark brown, hairy, somewhat zoned pileus, and a duller brown hymenium. The cystidia are dark brown, acuminate, $43\text{--}70 \times 7\text{--}8\cdot5\mu$, up to $13\cdot5\mu$ at the base. Hawkesbury River (J. B. Cleland; May, 1915); Tuggerah, on under side of fallen log (J.B.C.; October, 1914); Milson Island, Hawkesbury River (J.B.C.; November, 1914); Stanwell Park (J. L. Boorman; June, 1902); Lane Cove (A. A. Hamilton; August, 1909).

PENIOPHORA.

PENIOPHORA CINEREA Fries.—This species has been recorded by Cooke for Victoria. We have New South Wales specimens, growing on the bark of small, dead branches, which Lloyd suggests may be this species. Our plants form effused, pale greyish, ashy patches, about an inch in extent. The hymenium is finely tuberculated, and cracks. There are rough, somewhat club-shaped, colourless cystidia $25 \times 8\cdot5\mu$; and the spores are

sausage-shaped, slightly curved, $7.9 \times 3.5\mu$. Massee states that, in *P. cinerea*, the cystidia are fusoid, $30.50 \times 15.20\mu$, and the spores are globose, 5.7μ . If these measurements be correct, then our specimens are probably a distinct species: at present, however, they are best left under *P. cinerea*.

PENIOPHORA CRUSTOSA Cooke.—Specimens found on a rotten log, at Kurrajong Heights, in August, 1914, were referred to Lloyd. He says: "*P. crustosa*(?) I judge from the description only. I have never studied it in detail. For me, however, it would be a resupinate *Stereum*, from its woody texture, close to *Stereum annosum* Berk." Our specimens form a thickish, firm, irregularly nodular, cracking crust of a pallid colour, with a faint fawn tint. The cystidia are rough, $26.29.5 \times 8.5\mu$. Spores were not seen. Cooke records this species for New Zealand, and gives the cystidia as $50.60 \times 10.15\mu$.

TREMELLINÆ.

HIRNEOLA AURICULA-JUDÆ L.—Specimens, collected by Mr. Darnell-Smith, at Mount Kembla, in November, 1914, have been identified for us by C. G. Lloyd as this species. They were almost gelatinous, and very thin, about 2 inches in diameter, contracted to a stem-like lateral base, one surface smooth and convex, and pale reddish-brown, the other surface lighter and obscurely folded. Shed spores sausage-shaped, $10.5.12 \times 5.2.7\mu$. Cooke gives the spores of *H. auricula-judæ* as $20.25 \times 7.9\mu$. Lloyd, in his letter to us, states that, after comparing many specimens under many names, he has come to the conclusion that there are only two species of *Hirneola*, perhaps only one.

HIRNEOLA POLYTRICHA Mont.—This species has been dealt with by one of us (E.C.) in "The Australian Naturalist" (ii., p.225, 1913). We have since collected additional specimens, the spores of which are sausage-shaped, slightly curved, $16.17.5 \times 6\mu$. These have been identified by Lloyd. We have also found it at Thirroul (J. B. Cleland; April, 1909), and growing on *Ficus rubiginosa*(?) at Narrabeen (March and July, 1916. Spores $15.5 \times 6\mu$).

TREMELLA MESENERICA Retz.—New South Wales plants collected by us have spherical spores, 9μ in diameter.

TREMELLA FUSIFORMIS Berk.—Plants of this species, found on a dead trunk, at Mt. Irvine, in June, 1915, have been identified by C. G. Lloyd. White, with irregular flat lobes. Spores apparently $7 \times 3.4\mu$.

SEISMOSARCA HYDROPHORA Cooke.—Specimens have been kindly identified for us by C. G. Lloyd. Both came from the Sydney district, one from Mosman (July). Spores apparently granular, elongated, $13.5-14.5 \times 7\mu$.

We are unable, as yet, to place several other species belonging to this family. These include (1) a pale coral-pink, tremelloid species, with sausage-shaped spores $15.5-20 \times 5.2-6\mu$, on trunk, Bulli, May, 1914; (2) a pale yellow, frondose, jelly-like species, with spores $7.8 \times 4\mu$, Mosman, October, 1914.

Family CLAVARIÆ.

Cooke records for Australia, under this family, one species of *Sparassis* (N.S.W.), 41 species of *Clavaria* (11 for N.S.W.), and 6 species of *Calocera* (none for N.S.W.), the latter genus being, by some authors, placed in the *Tremellinæ*. Masee (Brit. Fungus-Flora) records for Britain one species of *Sparassis*, 10 of *Typhula*, 43 of *Clavaria*, 6 of *Pistillaria*, and 2 of *Pterula*.

CLAVARIA BOTRYTES Pers.—This species, one of the commonest of Australian Clavarias, easily recognised by its cauliflower-like appearance, and reddish-fawn or buff colour, is recorded by Cooke for all the Australian States except South Australia, in which State, however, one of us has frequently seen it. It seems to vary somewhat, both as to the degree of division of its ultimate segments, and as to its colour (from a pale fawn to a reddish or yellowish fawny-buff). Masee, in his "British Fungus-Flora," gives the spores as $8 \times 5\mu$, but in his later work, "British Fungi and Lichens," as $12-14 \times 5-6\mu$, whilst Cooke gives them as $12-15 \times 6\mu$. Our specimens comprise the following:—Hawkesbury River, N.S.W., (May, 1913), plant pale yellowish, spores pear-shaped, $11 \times 5.5\mu$; Terrigal, N.S.W. (June, 1914),

reddish-fawn, spores pear-shaped, $10 \times 4.5\mu$; Hawkesbury River, N.S.W. (June, 1912), spores $11.5-12.5 \times 5.5\mu$; Hawkesbury River, N.S.W. (May, 1913), very pale fawn or brown, sometimes with a yellowish tint, spores $9 \times 5.5\mu$; New South Wales, buff-coloured, spores $8.5-10.4 \times 4.4\mu$; Mt. Lofty, S.A. (July, 1914), reddish-fawn, spores $10.4 \times 5\mu$. Another Mt. Lofty specimen, taken at the same place on the same date, was yellowish-brown, and the spores appeared as "elongated rods, $6-10 \times 2.2-5\mu$." A reddish-fawn specimen from the Hawkesbury River (May, 1913), with spores $10 \times 4.5\mu$, has the ultimate ends of the branches more divided and less knobby.

CLAVARIA FORMOSA Pers.—The discrepancies in the descriptions of this species, given by various authors, are rather disconcerting. Thus Massee places it amongst the Ochrosporæ, and gives the spores as ochraceous, $9 \times 3.4\mu$; whilst the same author later (Brit. Fungi and Lichens) states that the spores are colourless, and $12-15 \times 5.6\mu$. The coloured figure in the last-named work also differs from that given by Cooke (Aust. Fungi). Whatever be the explanation of these differences, the plants we have met with, and placed under *C. formosa*, are identical with Cooke's plate. Microscopically, the spores also show a faint ochraceous colouration, perhaps explaining why some authors consider them as colourless, and others as tinted. The spores of our specimens measure 7-9, occasionally $11, \times 4.5-5\mu$. Hawkesbury River (May and June); Newington (June). A pale yellow form found at Newington (spores $7.8-8.5 \times 4.2\mu$), close to pinkish-fawn and reddish-ochre plants, may perhaps be *C. aurea*, which was collected at Pennant Hills, Parramatta, during the Challenger Expedition. (Journ. Linn. Soc., Bot., xvi., p.38, 1877).

CLAVARIA RUGOSA Bull.(?).—The following, found on several occasions, approaches closely to *C. rugosa*, and is at present best placed under it. It differs, apparently, in the spores not being warty, in the apex often becoming yellow-brown, and in a slight, fœtid smell. Up to $1\frac{1}{2}$ inches high, clubs simple or with several irregular prongs, or occasionally dividing into two near the base, apex blunt, occasionally slightly rugose but usually not so, solid,

pure white or creamy-white, apex often yellow-brown, somewhat mealy. A definite, slightly foetid smell (when kept in a bottle, a strong, rotten-cabbage smell). Spores colourless, subspherical, 7μ , $8.5 \times 7\mu$. North Bridge, Sydney (April and June, 1916); near shady rock, Hawkesbury River (May, 1916). Specimens collected at Milson Island, in June and July, 1912, with thick-walled, colourless spores $9-11 \times 7.7-5\mu$, appear to be the same species. Previously recorded for Wentworth Falls, by R. T. Baker (These Proceedings, 1906, 720).

CLAVARIA MUSCOIDES Linn.(?).—The following, beautiful little species agrees with the description of *C. muscoides*, save that the spores are smaller. Barely 1 inch high, furcate three or four times, usually unequally, ultimate segments short and blunt to subulate and blunt, orange-yellow, spores colourless, spherical, $2.8-3.5\mu$. Amongst moss, under *Kunzea* bushes, on clay soil, Lane Cove River, June, 1916 (D.I.C., Watercolour, No.68).

CLAVARIA CINEREA Bull.—Baker (These Proceedings, 1906, 719); Cheel [Report Bot. Gardens, Sydney, 1910 (1911), 11]. At Neutral Bay and Mosman, Sydney, a grey *Clavaria* has been frequently met with. Apart from the cinereous colour, the most constant feature is the size of the spores, which are spherical to subspherical, and $9 \times 7.5\mu$, $8.5-10.4\mu$, etc. Some specimens are simple, swollen, rugose clubs, several growing close together, in appearance rather resembling *C. inequalis*; others are more slender, with a few branches near the tip like a stag's horn; still others, from a short, thick trunk, exhibit large, blunt, rugose and swollen branches; whilst still others resemble the plate in Masee's "British Fungi and Lichens," though the colour is more dingy. The colour, locality, and spore-measurements, together with gradations between specimens, all indicate that one species comprises all our specimens. Masee, in his work last quoted, supports this view when he states, that the species is very variable, and that the spores are $7-9\mu$ in diameter. In his "British Fungus Flora," the spores are given as $5.6 \times 5\mu$, whilst Cooke gives them as $8-10 \times 5.6\mu$. Our specimens are sometimes hollow. Neutral Bay and Mosman (April, June, Novem-

ber); Gladesville (Miss Flockton; April, 1910); Leura (T. Steel; November, 1911); Rookwood (Miss Spencer; July, 1910); Cook's River (A. A. Hamilton; May, 1915).

CLAVARIA STRICTA Pers.(?)—A very graceful specimen found by Mr. Darnell-Smith, growing on wood, near Gosford, in August, 1915, may be this species. Pale ochraceous spores were not seen. The plant was orange-brownish, and showed a short stem, from which numerous, ascending, slender, subulate branches arose, which, at first, bifurcately branched several times, the ultimate branches being about an inch long. The species is recorded by Cooke for Victoria and New South Wales.

CLAVARIA CRISPULA Fries.—Pale orange plants, gathered on a fallen trunk, at Mt. Irvine, in June, 1915, agree with the description given by Cooke (Handbook of Aust. Fungi, No.1115) of this species. The spores are colourless, $7 \times 4.2\mu$.

CLAVARIA INÆQUALIS Müll.—Australian plants, which we have met with on several different occasions, though approaching most closely to *C. inæqualis*, also resemble in some points *C. fusiformis*. They approach the former in being gregarious, and only rarely subcaespitose, and in being a rich orange; and the latter, in being hollow, and in having spherical, *smooth* spores, Masee laying considerable stress on the *warty* spores of *C. inæqualis*. Specimens collected under moist rocks, on the Hawkesbury River, in November, 1914, and again in August, 1916, may be described as follows:—Clavate, up to $2\frac{1}{2}$ inches high, by $\frac{1}{4}$ inch thick, rich salmon-orange, the salmon tint becoming more evident in drying; hollow, the inside pallid salmony-whitish, the outer layer darker; sometimes bursting irregularly at the top, with yellowish tips, leaving an irregular, trumpet-like opening; spores smooth, spherical, $4.5-8\mu$ in size; basidia with four, occasionally two, sterigmata. A faint apricot-smell. Numerous, fine specimens were collected also at Narrabeen, under moist rocks, on January 1st, 1915. There are also specimens in the National Herbarium, Sydney, collected at Berowra by Mr. A. H. S. Lucas, in July, 1914, which were of a rich salmon pink colour at first, changing to rich cream.

CLAVARIA ROSEA Fries.—At Mosman, Sydney, in June, 1915, and at Neutral Bay, in June, 1916, we came upon many specimens of a salmon-pink *Clavaria*. These agree with the description of *C. rosea*, save that the spores, instead of being 2 or 3 μ in size, are 6 \times 3.6 μ . The following is the description of our specimens:—Up to 2 $\frac{1}{4}$ inches high, slender, somewhat flexuous, attenuated both ways from the middle, sometimes rather broadened or ribbon-like, coral-red or rosy-pink, often pruinose above, when buried amongst leaves with a whitish base, solid, flesh bright coral-red, gregarious amongst leaves under shrubs. There are also specimens in the National Herbarium from Penshurst (E. Cheel; May, 1901); Mount Victoria (A. G. Hamilton; March, 1910); Botanic Gardens, Sydney (E. Bennett; January, 1901).

CLAVARIA AURANTIA Cooke & Masee.—Specimens collected under rocks, at Neutral Bay, in June, 1916, may be described as follows:—Clavate, 1 $\frac{1}{2}$ inches high, occasionally slightly forked at the tip, often with one or two furrows longitudinally, usually a little twisted, bright clear egg-yellow, apricot-smell when crushed [spores not seen]. We have also collected it in the same situations and place, in June, 1912, and June, 1913.

CALOCERA GUEPINOIDES Berk.—This species seems common on rotten wood. We have specimens from the Hawkesbury River, and from Mt. Lofty, near Adelaide. Spores 8.3-12 \times 3.5-5.5 μ .

CALOCERA CORNEA Fries.—Terrigal, June, 1914. Spores 8.5 \times 3.5 μ .

CALOCERA STRICTA Fries.—Gosford (Darnell-Smith; August, 1915).